



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00002SJ**  
Revision No:  
**1**

This is to certify:

That

**Stahlhammer Bommern GmbH**  
Carl-Zeiss-Strabe 7, 59077 Hamm, Nordrhein-Westfalen,  
Germany

is an approved manufacturer of  
**Steel Forgings**

in accordance with

**DNV rules for classification – Ships**  
**DNV class programme – DNV-CP-0237 Offshore mooring chain and accessories**  
**DNV-OS-E302 – Offshore mooring chain, Edition July 2022**

and the following particulars:

<b>Product</b>	<b>Forgings for chain cable accessories</b>
<b>Steel grade</b>	<b>R3, R4, and R5</b>
<b>Max. diameter</b>	<b>See page 2</b>
<b>Delivery condition</b>	<b>See page 2</b>
<b>Remarks</b>	<b>See particulars of the approval</b>

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules. Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2024-02-13**

This Certificate is valid until **2026-08-26**.

DNV local unit: **Essen**

Approval Engineer: **Torben Schälicke**



for **DNV**

This document has been digitally signed and will  
therefore not have handwritten signature

Christian Wildhagen

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: AM 311

Revision: 2022-12

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## Particulars of the approval

### Particulars of the approval

Forgings for mooring chain cable accessories			
Grade <sup>1)</sup>	Delivery conditions <sup>2),5)</sup>	Max. diameter or thickness (mm) <sup>3)</sup>	Material manufacturer <sup>4)</sup>
R3, R4, R5	NQT	89	Buderus Edelstahl GmbH

Remarks:

<sup>1)</sup> For approved material specification see table S1.

<sup>2)</sup> NQT: Normalized, Quenched and Tempered.

<sup>3)</sup> For nominal diameter of chain cable.

<sup>4)</sup> The approval is limited to the listed raw material manufacturer.

<sup>5)</sup> Heat treatment is performed by STB from outsource at K. & H. Fischer GmbH. Heat Treatment procedures is the responsibility of De Haan Special Equipment B.V.

Table S1 - Specification for chemical composition <sup>1)</sup>													
Grade, thickness (mm)		C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Al	N	
R3, R4, R5	89	Min	.30	-	.50	-	-	1.30	1.30	.20	-	.020	-
		Max	.38	.40	.80	.025	.015	1.70	1.70	.30	.25	.050	.012

Remarks:

<sup>1)</sup> The content of Sn, Sb, As and B may be required. In such cases, the maximum content shall be 0.020% for Sn, 0.020% for Sb, 0.030% for As and 0.0007% for B.